

Quadratic Relations of the Form $y = a(x - r)(x - s)$

Date: _____

EX: Consider $y = (x - 4)(x + 2)$

A. Expand and put into “Standard Form” ($y = ax^2 + bx + c$)

B. Graph the quadratic relation by using a table of values.

C. What are the x-intercepts?

How could you use the x-intercepts to find the vertex?

RULE: For quadratic relations in the form $y = a(x - r)(x - s)$, the x-intercepts (or “zeros”) are $(r, 0)$ and $(s, 0)$.

To find the vertex from the x-intercepts:

-The average of the intercepts is the x value of the vertex. So $x = \frac{r + s}{2}$

-Substitute this x value into the original quadratic relation to get the y value of the vertex.

EX: Sketch the parabola $y = -\frac{1}{2}(x - 3)(x + 5)$. Label the x-intercepts and the vertex.

EX: A parabola has x-intercepts of $(-1, 0)$ and $(7, 0)$ and has a vertex of $(3, 4)$. Determine the equation of this parabola in the form $y=a(x - r)(x - s)$.